

AMENDMENTS TO THE CLAIMS

1-11. (Cancelled)

12. **(Currently Amended)** An optical fiber coupling part comprising:
an optical fiber; and
at least one GRIN lens having an unattached first end and having a second end fusion-spliced with an end of said optical fiber, ~~said GRIN lens having an exposed end, and~~ said GRIN lens having a numerical aperture NA that is larger than a numerical aperture NA_s of a light emitting source, wherein the numerical aperture NA is 0.43 or more, wherein said light emitting source comprises a semiconductor laser, and wherein a tip part of said ~~exposed~~ unattached first end of said GRIN lens is flat.

13. **(Previously Presented)** The optical fiber coupling part according to claim 12, wherein the GRIN lens has a coefficient of thermal expansion expressed by $15 \times 10^{-7} \text{K}^{-1}$ or less, and is formed by a sol-gel method.

14-16. (Cancelled)

17. **(Currently Amended)** An optical fiber coupling part comprising:
an optical fiber having a numerical aperture NA_f;
a first GRIN lens having a numerical aperture NA₁, said first GRIN lens having an ~~exposed~~ unattached first end; and
a second GRIN lens having a numerical aperture NA₂, wherein a first end of said second GRIN lens is fusion spliced with ~~an end of said optical fiber~~ a second end of said first GRIN lens and a second end of said second GRIN lens is fusion spliced with ~~said first GRIN lens~~ an end of said optical fiber,
wherein a tip part of said ~~exposed~~ unattached first end of said first GRIN lens is flat, and wherein the numerical aperture NA_f of the optical fiber, the numerical aperture NA₁ of the first GRIN lens, the numerical aperture NA₂ of the second GRIN lens, and a numerical aperture NA_s

of a light emitting source are selected to satisfy the formula expressed by:

$$NA_f \leq NA_2 < NA_s \leq NA_{1s}$$

wherein said light emitting source comprises a semiconductor laser.

18. (Previously Presented) The optical fiber coupling part according to claim 17, wherein the numerical aperture NA_1 of said first GRIN is 0.43 or more.

19. (Currently Amended) The optical fiber coupling part according to claim 17, wherein a length Z_1 of the first GRIN lens satisfies the formula expressed by:

$$Z_1 = (n_o * d_1 / NA_1) \arctan (d_1 / (NA_1 * L))$$

wherein a refractive index of glass at a center part of the first GRIN lens is set at n_o , a radius of the first GRIN lens is set at d_1 , and a distance between the lens and the ~~light emitting source~~ semiconductor laser is set at L .

20. (Previously Presented) The optical fiber coupling part according to claim 17, wherein said first GRIN lens and said second GRIN lens have a coefficient of thermal expansion expressed by $15 \times 10^{-7} K^{-1}$ or less, and at least the first GRIN lens is made by a sol-gel method.

21-29. (Cancelled)

30. (New) The optical fiber coupling part according to claim 12, wherein said unattached first end of said GRIN lens is arranged so as to directly receive light from said semiconductor laser.

31. (New) The optical fiber coupling part according to claim 17, wherein said unattached first end of said GRIN lens is arranged so as to directly receive light from said semiconductor laser.